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ABSTRACT

The experience of an urban waterfront setting can enhance sociocultural education for children, facilitate development of mental and physiological skills, and can function as a playground. The designs of waterfront environments should therefore consider children's needs and enhance both the interaction of children with their environment and learning from this interaction. This study explored the visual attributes associated with children's preferences for waterfront environments. An exploratory study was conducted with 21 five- to six-year-olds at a child care center at Ohio State University. Children were shown photographs of a variety of waterfront settings and asked to select and then rank order the five scenes they liked best. Results showed that children tended to express more preference for constructed surfaces, changes in level of constructed surfaces or water, and a lighter environment in waterfront settings. Children also expressed greater preference for places of social activity or places in which they could perform activities on their own. The study also concluded that children preferred natural settings slightly less than settings with constructed features. However, "water" appeared as an important environmental component of children's preferences. These visual attributes may be associated with a child's need for freedom, stimulation, imagination, exploration, observation, and manipulation. (Contains 23 references.) (Author/SD)

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WATER AS PART OF CHILDREN'S ENVIRONMENT & CHILDREN'S PREFERENCES FOR WATERFRONT SETTINGS

ED 404 001

Anli Ataov

ABSTRACT: The experience of an urban waterfront setting can enhance sociocultural education for children. Experiences with water can facilitate the mental development and physiological skills of children. Also, a water experience can function as a playground. For these reasons, the designs of waterfront environments should consider children's needs and enhance the interaction of children with their environment and learning from this interaction. This study explores the visual attributes associated with children's preferences for waterfront environments. An exploratory study was conducted with 21 five to six year-old children at the Child Care Center of the Ohio State University. Children were shown photographs of a variety of waterfront settings and asked to select and they rank order the five scenes they liked the best. Children were then interviewed to determine the reasons for the preference. The results of this study show that children tended to express more preference for constructed surfaces, change in level of constructed surfaces or water, and a lighter environment in waterfront settings. Children also expressed greater preference for places of social activity or places in which they can perform activities on their own. The study also concludes that children preferred natural settings slightly less than settings with constructed features. However, "water" appeared as an important environmental component of children's preferences. These visual attributes can be associated with a child's need for freedom, stimulation, imagination, exploration, observation, and manipulation.

Water is magic with its color and movement. Water can contribute a great deal to the appearance, surroundings, healthfulness, and the daily life of residents. The urban waterfront redevelopment movement aims to combine the alteration of land and water uses along different types of water bodies in cities and towns, which have been losing their historical heritage, natural richness, and vitality. Water bodies are rivers, lakes, oceans, bays, creeks, and canals. This redevelopment movement became popular in the 1960s. The 1970s experienced a tremendous increase in the number of waterfront renovations, which accelerated in the 1980s (Breen & Rigby, 1994). The projects and plans include trails and walkways, parks, cultural facilities, such as museums, condominiums, offices, restaurants, industrial and working facilities, ports, and ferry docks. Each project or plan offers a physical design integrated with the city to achieve goals related to a range of human needs, values, and rights, particularly to activity and

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well-being. Each project deals with the natural asset, water, and the physical form, as well as their interrelationship, in order to achieve functional, sociocultural environmental, and, or historic preservation goals. However, only a few of the projects consider water as part of children's play and learning environments and reflect the wise and exciting basis of experience that water can provide for children. Water can appeal to the needs of children and can be used as an active learning tool for children to interact with and learn from at many levels. Depriving children of experiencing waterfront settings from which they can learn must be corrected.

This study focuses on children's experiences of waterfront environments for primarily three reasons. First, the experience of an urban waterfront setting can yield sociocultural education for children. The architecture of the built and cultural environment can help or hinder the behavior of children; spaces created through the use of water can compel and motivate them (Taylor, 1993). Urban waterfront settings can provide a variety of water environments for different persons and various uses. Urban waterfront settings can serve a "multiuse" function and contribute to the public realm. Every contribution of the public realm that an urban waterfront setting can provide should be open to the use of children. An adult public space with symbolic references, cultural integration, and environments for learning social relations, can teach children a great deal about their place. Therefore, the design of an urban waterfront setting should include basic components of children's environment, such as emotional experience, intimate scale, and physical interaction with responsive natural elements. Second, experiences with water can facilitate the mental development and physiological skills of

children. Use of water enables a child to discover sensory stimulation (Mogensen, 1987). Based on the assumption that performance can reach an advanced or mature level through proper stimulation and practice, water with which to interact with can facilitate mental development and physiological skills (Langendarfer, 1987). Third, a water environment can function as a playground. Child development experts state that the work of childhood is play, and, thus, children can create play situations through the use of their different cognitive, social, affective, and psychomotor development in unique ways (Langendarfer, 1987). Water can serve as a source that children can use in their play.

These potential benefits of waterfront environments for children raise the question of how to design waterfronts for children. Providing the designs that enhance the potential for children to interact with their environment and learning from this interaction and developing guidelines and controls that can be used to improve the physical qualities of waterfront settings for children are imperative. For such designs, determining the visual attributes associated with children's preferences for waterfront settings is important. This paper reports the findings of an exploratory study conducted as an attempt to reveal visual attributes affecting children's preferences for waterfront settings.

Respondents, Stimuli, and Procedure

A sample of 21 children was selected from the Child Care Center of the Ohio State University for such an empirical study. The Child Care Center had the advantage of permitting an easy access to a number of children. The age of the children ranged from five to 6. The sample is composed of 10 female and 11 male subjects. Seventeen children

are Caucasian and four are Asian or Hispanic. In this study, the effect of gender or ethnic background on children's response is not included. The interpretation of the results is oriented toward extracting visual categories of waterfront environments based on a total set of responses.

Twenty color photographs of a variety of waterfront settings were selected from different countries including England, the Netherlands, Italy, Turkey, and the U.S. Magazines, journals, books, and postcards were used to collect the photographs. The study did not involve any manipulation of the photographs. The photographs represented a variety of waterfront settings including various physical components.

Children were shown the 20 color photographs. Then they were asked to select and rank order five photographs of the waterfront settings they liked the most. Supportive and comprehensive information was collected from the reasons children gave for the selected photograph of the waterfront setting they liked the most. The children were free to answer in as extensive a manner as they wished. This method has been employed in a number of studies of children's preferences for environment (Balling & Falk, 1982; Zube, Pitt, & Evans, 1983).

Information gathered from the reasons was ranked according to the frequency of response and vivid description. This narrative information was categorized into seven physical and perceptual dimensions: a) Visual Form; b). Activities; c) Naturalness/Natural Elements; d) Structures; e) Personal Associations; f) Boats; and g) Buildings. Some of the dimensions were created by using classification schemes employed by earlier studies (Hart, 1979; Malinowski & Thurber, 1996; Zube et al.,

1983). Other dimensions were developed from the responses of the 21 children in the sample. Table 1 illustrates a few typical responses for each category.

Table 1. Classification of children's reasons for choosing the best liked waterfront setting

CATEGORY	Representative responses
Visual Form	
Form - constructed surfaces	"Circles and squares on the ground"; "lots of buildings"
- change in level	"Changing levels of buildings"; "changing levels of water"
Light	"Sun shinning on the front of the building"; "it looks sunny"
Color	"Buildings are in color"; "the color of water"; "the color of trees"
Activities	
Activities	"People can walk over the walking path near the water"
	"I like to walk and climb; I like to go to the mountains"
Implied Instrumental Use	"I can play in the water"; "I can go for swimming"
	"I can go for fishing"; "I like to ride the ship"
Naturalness/Natural Elements	
Water	"Water goes through the pipes"
	"I like to look at the water"; "there is water"
Vegetation	"There are trees"; "there is grass"
Structures	"I like the structure at the corner"; "I like the columns and tunnels"
	"I like the dark windows of the building"
Personal Associations	"The white house looks like the mosque my dad goes"
	"The place looks like a movie theater that I have been so many times"
Boats	"I like this place because there is a lot of boats"
Buildings	"I like this place because I like this buildings"
	"I like this place because there is a lot of buildings behind"

Results

As shown in Table 2, the most often mentioned item was "visual form" category (29%). The visual form category includes "form," "light," and "color." Form, described as "constructed surfaces" and "change in level" accounted for more than half of the responses in the visual form category (58%). Some of the visual aspects mentioned in the

form category included "the circle design and the squares of the floor," "the buildings," and "the deck of a house." The item mentioned the second most often was "activities" (25%). One fourth of the responses focused on activities associated mainly with water. Children mentioned either regular activities or implied instrumental use including "playing in the water," "going swimming," taking a bath," "going fishing," and "riding the ship." The least mentioned categories included "boats" and "buildings."

Table 2. Frequency of physical and perceptual dimensions mentioned by the children

CATEGORY	Frequency	%
Visual Form	**24**	**29**
form	(14)	58 (of visual form)
* constructed surfaces	(8)	
* change in level	(6)	
light	(3)	13 (of visual form)
color	(7)	29 (of visual form)
Activities	**21**	**25**
activities	(10)	48 (of activities)
implied instrumental use	(11)	52 (of activities)
Naturalness/Natural Elements	**12**	**14**
vegetation	(3)	25 (of natural)
water	(8)	67 (of natural)
natural/constructed	(1)	8 (of natural)
Structures	**12**	**14**
Personal Associations	**6**	**7**
Boats	**5**	**6**
Buildings	**4**	**5**

Discussion

Studies that have investigated children's preferences for the environment can be grouped into two categories: a) children's preferences for certain types of feature in their immediate surroundings (Hart, 1979; Moore, 1986; Malinowski & Thurber, 1996); b) children's preferences for general landscape types (Balling & Falk, 1982; Zube et al., 1983).

Most of the preference studies have investigated different age groups. These studies revealed three symbolic (naturalness, natural elements, intended use) and one formal (complexity) visual attributes of effective on children's feelings about the environment. For "naturalness," researchers used Piaget's (1929) classification of intellectual tendency for children thought to form conclusions. Piaget discusses three types of intellectual tendency for child thought: realism, animism, and artificialism. Zube et al. (1983) describe animism as the tendency to animate physical objects and events, to give them life and artificialism as the belief that all objects and events are made to serve human purposes. According to Piaget's theory, young children who are at the preoperational stage of thought (less than eight years old) are less able to distinguish between animate and inanimate objects. The adaptation of this notion to landscape perception reflected in a number of studies (Zube et al., 1983; Bernáldez, Gallardo, and Abello, 1987; Balling and Falk, 1982). The researchers found that younger children (ages 6-8 and 9-11) have less of a preference for natural settings than teenagers (ages 12-18). The younger children give a relatively low level of importance to natural settings. On the other hand, in the studies of Hart (1979), Zube et al. (1983), Malinowski and Thurber (1996) "water" appeared as an important environmental element for children. This study did not determine the differences in preferences of children of different age groups and the varying visual attributes effecting their preferences, but the results show some consistencies with the findings for the age group of this study.

Table 3. Natural-Constructed Dimension of the physical and perceptual reasons mentioned by the children

Dimension	Frequency	%
Constructed	41	48
Natural	35	41
Natural/Constructed	10	12

Subgroups of the Natural Dimension	%
The Water	65
-The use of water	40 (of the water)
- The presence of water	60 (of the water)
Other Natural Elements	35

As shown in Table 3, the frequency of reasons which includes a natural component is slightly less than the frequency of reasons which includes constructed components. The "natural" dimension includes comments related to the naturalness of the environment, natural elements in the environment, and activities children they can perform within the natural environment and with the natural elements. "I like swimming," "I like fishing," "I like to take a bath," "it looks like my grandma's lake," and "I like the changing levels of water" are some examples of comments in the natural dimension. Approximately 65 percent of the comments on the natural environment are given in relation to the water element. Moreover, almost 40 percent of the reasons are related to the use of water. The "constructed" dimension includes comments related to the visual form of the environment, structures, and buildings. Ten percent of the reasons are related to the "natural/constructed" dimension which is a separate merged dimension including such comments as "docks can play in the water," "it looks like a rowing boat," and "I like to sit on the boat."

"Intended use" is another visual attribute identified as salient to children's place preference (Hart, 1979; Zube et al., 1983). For example, Hart (1979) found that younger children (ages 6-8 and 9-11) show preferences for places of social activity, while older children (ages 12-18) prefer places valued for a particular land use. Zube et al. (1983) also assessed in a lifespan developmental study that children may appreciate the outdoors because that is where they can play and gather. On the other hand, since older children have more opportunity to explore outdoor places, their appreciation of the outdoor places may result from the specific land uses of these places (Malinowski & Thurber, 1996).

Table 4. Egocentric-Allocentric Dimension of the physical and perceptual reasons mentioned by the children

Dimension	Frequency	%
Physical Elements	45	54
Activities	21	25
Naturalness/Natural Elements	12	14
Personal Associations	6	7

As shown in Table 4, the most liked waterfront setting was in the dimension of "physical elements" (54%). This category includes elements that can be found in the immediate environment, such as buildings, structures, boats, and anything related to the visual form of the environment. The research shows that other than physical elements children prefer a specific waterfront setting more for "activities" they can perform than for the "naturalness" of the place. They can play in the water or they can go swimming. This result supports the findings of Hart (1979), which show the importance of social activity on children's preferences for places.

Another interpretation of this classification scheme can be made in relation to "personal associations." Hart and Moore (1973) assert that until the age of five or six children tend to view the world egocentrically, considering the environment only as it relates to themselves. They further assert that, beginning around age three, a child's self-centered orientation is gradually replaced by a fixed reference system in which the environment is thought of in relation to important landmarks, such as the child's house or school. As children approach the ages of 10 or 11, their reference system becomes more abstract and they view the environment in terms of a coordinated reference system. As Table 4 shows, personal associations appear to be a separate category for children's preferences of waterfront settings. "I like the white house, because it looks like the mosque my dad goes," "the place looks like my grandma's lake," and "I like bricks, because my house is made up of bricks" are some comments of children who think of their environment in relation to important landmarks around them.

This aspect of children's preferences leads to the last visual attribute that has been revealed in previous studies of children and environment. "Complexity" is the visual attribute that highlights formal aesthetics issues. Complexity does not appear to be a component of children's preferences for places. For example, in the study of lifespan Zube et al. (1983) found that land use complexity is irrelevant to children. In this study, complexity does not appear as a visual attribute. Children did not mention anything that could be related to the complexity of environment.

Some visual attributes revealed in this study also bring light to another type of information. The literature review shows that these attributes have an association with

certain needs of children. For example, "constructed surfaces" lead to a feeling of *spaciousness* and *a sense of freedom* (Lynch & Lukashok, 1990). These visual attributes can enable children to move and play. "Change in level" is associated with *a sense of pleasurable surprise* and *stimulation* (Burden, 1977). This movement on the surface can attract children's attention and yield the opportunities for children to create play situations. "Passive activities," such as to sit under a tree or to sit on the boat, enable children to observe or passively engage with the environment and with what is going on in that environment (Whyte, 1978). Such "activities" as to play in the water, to go swimming, to go fishing, and to ride the ship can *manipulate* children in different ways. For example, water enables children to perform a useful, harmless, and satisfying activity, and to release energies (Lynch & Banerjee, 1990; Carr et al., 1992). "Trees" or "play areas" enable children to use their *imagination*, to *create fantasies*, and to *manipulate* by climbing, carving, and hiding (Kaplan & Kaplan, 1989; Lynch & Lukashok, 1990). "Water," "waterfalls," and "waterfronts" stimulate children to *explore*, enable them to *relax* and to be *physically and visually in contact with nature* (Backer, 1973; Lynch & Banerjee, 1990; Carr, 1992; Lynch & Lukashok, 1990).

To summarize, this study has been conducted as an attempt to investigate the preferences of five to six year-old children for waterfront settings and to assess the reasons why children chose certain settings as their favorites. This investigation is not a final study, but yielded useful information in regards to what children pay attention to in a waterfront setting, how they emotionally respond to the physical features in a waterfront setting, and to which of their needs these features are associated. The reasons

mentioned for the most liked waterfront setting of children are related to the visual form of the environment and the activities that children can perform in that particular setting. Children tended to express more preference for constructed surfaces, change in level, and a lighter environment. Children also expressed greater preference for places of social activity or places in which they can perform activities on their own. These visual attributes can be associated with a child need for freedom, stimulation, imagination, observation, and manipulation. The study also concludes that children preferred natural settings slightly less than settings with constructed features. However, "water" appeared as an important environmental component effective on children's preferences. Almost 40 percent of the children's comments on water were related to the "use of water." The use of water enables children to discover new forms of comprehensive stimuli of the senses, facilitates mental development and physiological skills, and yields opportunities for children to create play situations.

The study revealed the visual attributes most salient to five to six year-old children's preferences for waterfront settings. However, further study needs to be conducted with a larger sample of children to explore developmental trends in the preferences of waterfront settings and to examine reasons that underlie children's preferences for these settings.

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